

CLAIMS

1. An input apparatus for performing an input operation as a pressing operation or a touching operation on a front surface of a panel, comprising:

5 input detection means for detecting whether the pressing operation or the touching operation is being performed on the front surface of the panel;

10 waveform generation means for generating a signal waveform after the pressing operation or the touching operation is performed when the input detection means detects that the pressing operation or the touching operation is being performed and generating a signal waveform having a larger amplitude after the pressing operation or the touching operation is confirmed than the signal waveform generated after the pressing operation or the touching operation is performed; and

15 panel deforming means for deforming the panel corresponding to the signal waveform generated by the waveform generation means.

20 2. The input apparatus as set forth in claim 1,

25 wherein the signal waveform generated by the waveform generation means after the pressing operation or the touching operation is performed has a smaller amplitude and a higher frequency than the signal waveform generated by the waveform generation means after the pressing operation or the touching operation

is confirmed.

3. The input apparatus as set forth in claim 1,

wherein the input detection means detects a signal that varies when the pressing operation or the touching operation is being performed on the front surface of the panel to determine whether the pressing operation or the touching operation is being performed on the front surface of the panel, and

wherein the waveform generation means generates a signal waveform after the pressing operation or the touching operation is performed and the signal starts changing and generates a signal waveform having a larger amplitude after the signal becomes stable and the pressing operation or the touching operation is confirmed than the signal waveform generated after the pressing operation or the touching operation is performed.

4. The input apparatus as set forth in claim 1,

wherein the waveform generation means varies a signal waveform after the pressing operation or the touching operation is performed until the pressing operation or the touching operation is confirmed.

5. The input apparatus as set forth in claim 1,

wherein when the input detection means detects that the pressing operation or the touching operation is being performed and the pressing operation or the touching operation is not accepted as the input

operation, the waveform generation means generates a signal waveform only after the pressing operation or the touching operation is performed until the pressing operation or the touching operation is confirmed.

5 6. An information process apparatus having an input apparatus for performing an input operation as a pressing operation or a touching operation on a front surface of a panel, comprising:

10 input detection means for detecting whether the pressing operation or the touching operation is being performed on the front surface of the panel;

15 waveform generation means for generating a signal waveform after the pressing operation or the touching operation is performed when the input detection means detects that the pressing operation or the touching operation is being performed and generating a signal waveform having a larger amplitude after the pressing operation or the touching operation is confirmed than the signal waveform generated after
20 the pressing operation or the touching operation is performed; and

 panel deforming means for deforming the panel corresponding to the signal waveform generated by the waveform generation means.

25 7. A remote control apparatus having an input apparatus for performing an input operation as a pressing operation or a touching operation on a front

surface of a panel, comprising:

input detection means for detecting whether the pressing operation or the touching operation is being performed on the front surface of the panel;

5 waveform generation means for generating a signal waveform after the pressing operation or the touching operation is performed when the input detection means detects that the pressing operation or the touching operation is being performed and
10 generating a signal waveform having a larger amplitude after the pressing operation or the touching operation is confirmed than the signal waveform generated after the pressing operation or the touching operation is performed; and

15 panel deforming means for deforming the panel corresponding to the signal waveform generated by the waveform generation means.

8. A control method of an input apparatus for performing an input operation as a pressing operation
20 or a touching operation on a front surface of a panel, comprising the steps of:

generating a signal waveform after the pressing operation or the touching operation is performed when it is detected that the pressing
25 operation or the touching operation is being performed;

generating a signal waveform having a larger amplitude after the pressing operation or the touching

operation is confirmed than the signal waveform generated after the pressing operation or the touching operation is performed; and

deforming the panel corresponding to the generated signal waveform.

9. An input apparatus for performing an input operation as a pressing operation or a touching operation on a front surface of a panel, comprising:

input detection means for detecting whether the pressing operation or the touching operation is being performed on the front surface of the panel;

time period measurement means for measuring a time period after the pressing operation or the touching operation is performed until the pressing operation or the touching operation is confirmed when the input detection means detects that the pressing operation or the touching operation is being performed on the front surface of the panel;

waveform generation means for generating a signal waveform corresponding to the time period measured by the time period measurement means; and

panel deforming means for deforming the panel corresponding to the signal waveform generated by the waveform generation means.

10. The input apparatus as set forth in claim 9, wherein the waveform generation means generates a signal waveform having an amplitude

reversely proportional to the time period measured by the time period measurement means.

11. The input apparatus as set forth in claim 9,

wherein the waveform generation means

5 generates a signal waveform having a larger amplitude when the time period measured by the time period measurement means is shorter than a predetermined time period than a signal waveform generated when the time period measured by the time period measurement means is
10 longer than the predetermined time period.

12. The input apparatus as set forth in claim 9,

wherein the input detection means detects a signal that varies when the pressing operation or the touching operation is being performed on the front
15 surface of the panel to determine whether the pressing operation or the touching operation is being performed on the front surface of the panel, and

wherein the time period measurement means confirms the pressing operation or the touching
20 operation when the signal that varies after the pressing operation or the touching operation is performed becomes stable and measures a time period after the pressing operation or the touching operation is performed until the pressing operation or the
25 touching operation is confirmed.

13. An information process apparatus having an input apparatus for performing an input operation as a

pressing operation or a touching operation on a front surface of a panel, comprising:

input detection means for detecting whether the pressing operation or the touching operation is being performed on the front surface of the panel;

time period measurement means for measuring a time period after the pressing operation or the touching operation is performed until the pressing operation or the touching operation is confirmed when the input detection means detects that the pressing operation or the touching operation is being performed on the front surface of the panel;

waveform generation means for generating a signal waveform corresponding to the time period measured by the time period measurement means; and

panel deforming means for deforming the panel corresponding to the signal waveform generated by the waveform generation means.

14. A remote control apparatus having an input apparatus for performing an input operation as a pressing operation or a touching operation on a front surface of a panel, comprising:

input detection means for detecting whether the pressing operation or the touching operation is being performed on the front surface of the panel;

time period measurement means for measuring a time period after the pressing operation or the

touching operation is performed until the pressing operation or the touching operation is confirmed when the input detection means detects that the pressing operation or the touching operation is being performed on the front surface of the panel;

5 waveform generation means for generating a signal waveform corresponding to the time period measured by the time period measurement means; and

10 panel deforming means for deforming the panel corresponding to the signal waveform generated by the waveform generation means.

15. A control method of an input apparatus for performing an input operation as a pressing operation or a touching operation on a front surface of a panel, comprising the steps of:

15 measuring a time period after the pressing operation or the touching operation is performed until the pressing operation or the touching operation is confirmed when it is detected that the pressing operation or the touching operation is being performed on the front surface of the panel;

20 generating a signal waveform corresponding to the measured time period; and

25 deforming the panel corresponding to the signal waveform generated by the waveform generation means.